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Impact of arts participation on children's achievement

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Impact of arts participation on children's achievement: A systematic literature review

Abstract

This paper reports on a systematic literature review to examine the association between children and young people's participation in arts activities and their academic achievement. The 24 studies that met our criteria for inclusion and weight of evidence (2004-16) had mixed findings. Whilst many of the research designs employed would not meet positivist criteria for rigour – such as sample size, statistical significance and causality – typically required by public bodies to justify expenditure, there are examples throughout the literature reviewed of academically-related benefits to participants, such as increased confidence, creativity or more positive attitude towards their studies. Overall, there appears to be some justification from the literature for public investment in high-quality, long-term arts education programmes for children and young people in schools and community settings, on the basis of its potential to enhance academic achievement. However, there may be more intrinsic benefits to arts participation than the instrumental, essentially economic justification of improved academic standards.

1. Introduction

In 2006 the first World Conference for Arts Education took place in Lisbon, Portugal organised by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The value of arts education was at the heart of the proceedings, primarily emphasising the case that 'Arts Education is a universal human right' (UNESCO, 2006:3). This assertion was made as a result of examining international declarations and conventions which conclude that every individual has the right to an education which allows them to access the world around them and to participate in the cultural and artistic life of the communities that they encounter. Although UNESCO does not specifically define 'the arts', their inclusion under the theme of 'creativity' implies a definition close to that of the Collins English dictionary of 'imaginative, creative, and nonscientific branches of knowledge' which we take in this article to include the disciplines of art & design, music, dance, drama, poetry and creative writing. Whilst we would not argue that creativity is the sole preserve of the arts – science too can be a creative pursuit (e.g. Mansfield and Busse, 1981) – there is a particular association between the improvisatory and emotional content of arts experience and the mental plasticity emphasised by neuroscientific descriptions of creativity (Tietze, 2017). Fleming (2011: 57) has argued that 'if creativity is seen as more than just making in a literal sense, it is possible to see a response to art itself as a creative process.' However, although there is widespread agreement on the contribution of arts participation to personal creativity and the importance of the inclusion of arts in school curricula, arts tend to receive decreasing public funding in many countries, particularly during times of economic stress (Downing, Johnson, & Kaur, 2003; Baidak et al., 2009; Henley, 2012; EDUCULT, 2013; Smith, 2013). It seems that what public bodies would view as more tangible evidence of the benefits of arts

participation to students' wider educational achievement is required to justify such funding. The role of research to provide the necessary evidence is fundamental.

In some respects, trying to 'measure the impact' of a range of aesthetic and emotive experiences which themselves defy categorisation - let alone the difficulties in proving causality between participation and effect – might be seen as an overly positivist, reductive enterprise which negates the very essence of artistic expression. It could be argued that the intrinsic value of the arts is to '... illuminate our inner lives and enrich our emotional world' at a profound and intangible level (Mowlah *et al.* 2014: 4) and that to attempt to justify them in terms of extrinsic outcomes is a spurious exercise. Nevertheless, over recent years a number of attempts have been made to provide such evidence of benefit to participants' general academic achievement. In some cases this has been driven by the perceived need to respond to political decisions (EDUCULT, 2013; NSEAD, 2016) or economic situations (Adams, 2014); in others it is the result of academic interest driven by a personal belief in the importance of the arts (Fleming, 2011). Clearly, the audience for such research will determine the types of outcome and evidence ascribed value and will therefore have an influence on what is evaluated and the way in which this is done. For example, an economic argument for the value of arts education has gradually been developed to persuade UK governments and public bodies to reform curricula and invest in arts participation (Robinson, 1999; Holden, 2015). The impact of this argument and the evidence that has been gathered to justify it can be seen in the design and rationale of school curricula (DfE 2014, Education Scotland 2013) where the emphasis and rhetoric is placed on preparing students for a present and future 'creative economy' (Education Scotland, 2013). This phrase, usually taken to include commercial arts and digital technologies, synonymises creativity and the arts, at least insofar as creative activity can be monetised. Adams (2014) argues that this emphasis on the economic benefits of the arts has led to a narrowing of the ways in which it is now possible to justify arts education expenditure or its role in the school curriculum.

In making the argument for long-term, indirect impact on economic wellbeing, some quasi-experimental studies have attempted to arrive at measures of academic performance before and after arts participation (e.g. Kendall *et al.* 2008a), or drawn correlations between the two (e.g. Metsapelto & Pulkkinen, 2012). One criticism that could be levelled at such positivist approaches is that of establishing causality; it is problematic to control for factors (e.g. non-arts teaching during the period of the study, maturation etc.) that may have led to the observed gains in attainment. Causality may operate in the opposite direction, with higher-performing students more likely to participate in the arts because of their higher socioeconomic status or social capital. Even such apparently straightforward measures as improvement in school attendance (e.g. Kendall *et al.* 2008b) – which may be hypothesised to lead indirectly to higher attainment – are open to such causality criticisms. If we turn instead to the more frequently studied affective benefits of arts participation on wellbeing and confidence (e.g. Martin *et al.* 2013), the further difficulty emerges of perceived subjectivity in findings. Studies drawing on data from surveys or interviews with participants about the relationship between their arts experience and its impact on particular aspects of their lives can appear to lack rigour as they are based on self-reported subjective experience rather than

‘objective measurement’ of outcomes. There is also a danger of Hawthorn effect upon participants or the personal views of researchers influencing responses, either through the use of leading questions in interviews or unrepresentative data selection. However, to dismiss all such qualitative studies as having such weaknesses inherent within their research designs is to deny that arts participation is primarily a subjective experience and that it is possible to construct a rigorous methodology to capture participants’ response to and benefit from such experience in a way which has arguably greater validity than a naïve experiment to provide quantitative evidence for funders.

The challenges outlined above lead us to the question ‘How do we evaluate and synthesise the findings of research claiming an impact of arts participation on achievement with studies drawing upon participants’ perceptions of academically-related benefits?’ In this context, we define participation as active performance (for example, singing, dancing, drawing, writing) as distinct from attending arts events as an audience member. We define ‘impact’ as having contributed to some discernible change in an aspect of students’ cognitive or emotional processes – for example as measured by the proxy of performance in tests of general literacy or numeracy. Of course, the ‘impact’ may be on students’ creativity – however conceptualised and measured – thus the arts may be seen as having a dual role in both involving creative processes in their enactment and leading to an enhancement of creative thinking skills. The role of rigorous research – both quantitative and qualitative – in validating such impacts or associations is crucial, but how this is conducted, and by whom, should be subject to detailed scrutiny. This was the purpose of our systematic review of relevant research literature between 2004 and 2016, commissioned by the Glasgow Centre for Population Health (GCPH) to respond to seven research questions, of which the first is the focus of this article:

What is the impact of participation in the arts on the academic achievement of school-aged children?

The use of the term ‘impact’ and the implied causality within the above question places it firmly within the ‘evidence-based’ discourse of current public policy-making, potentially favouring the positivist approaches discussed above over qualitative studies of participant experience. However, given that the latter are more common within this field and – as we have argued – are potentially as rigorous with greater validity than experimental studies, we reviewed a broad range of approaches within the literature to address this question.

2. Methodology

We elected to adopt the widely-respected approach to systematic review developed by the Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre, 2007, see Figure 1).

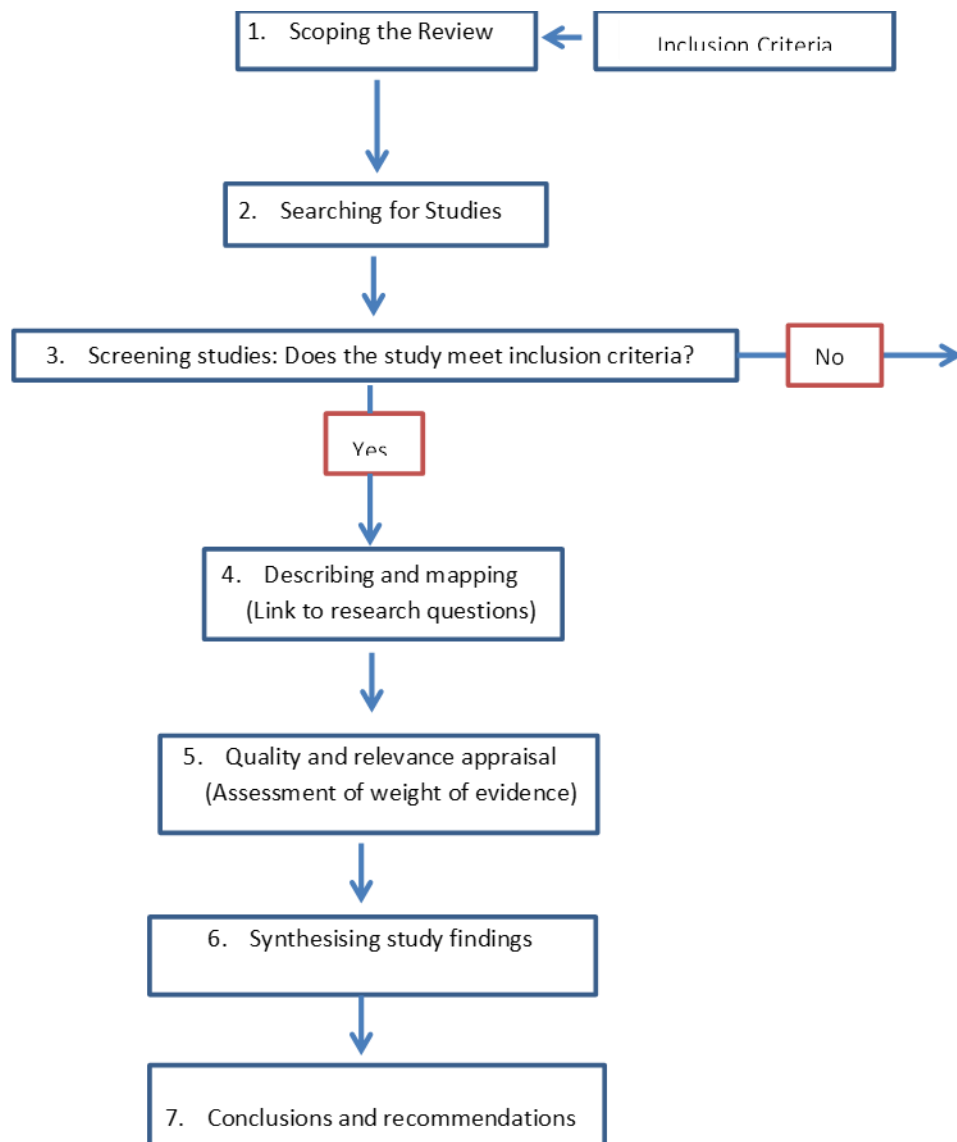


Figure 1: Flow chart illustrating systematic review process

This approach consisted of the following steps:

1. Scoping the review

An initial scoping exercise was undertaken to identify the range of systematic literature reviews pertinent to the research questions. Six databases were searched: Campbell, library, Cochrane library, Pubmed, DARE, ERIC and EPPI Centre, and 21 papers were identified of which eight met the inclusion criteria for reviewing the reviews. Data were extracted on populations, country, methodology, outcomes and effects on outcomes, key terms and definition. These data were used to inform the subsequent search strategy for the review. The inclusion criteria were:

- a. Topic: literature must relate directly to the relationship between arts participation and children's academic achievement or associated benefits, such as cognitive or creative development.
- b. Recency: literature should have been published since 2004 (the date of a comprehensive review in this area –Ruiz 2004)
- c. Research base: literature must be based upon empirical research (either qualitative or quantitative)
- d. Transparency: the methodology of the research upon which the literature is based must be made explicit (e.g. specifying sample sizes, instruments, analysis)
- e. Reliability/validity: as far as can be determined, the findings upon which the literature is based must be valid and reliable, taking into account the type of study (whether small or large scale, qualitative or quantitative).

2. Searching for studies

A search strategy was designed based on the scoping exercise and identification of key search terms and relevant databases. The search terms used in the study and combinations of searches are presented in Table 1.

Table 1: Search terms

1. Art*	a) Nursery	I. Achiev*
2. Craft	b) Infant school	II. Attain*
3. Danc*	c) Elementary school	III. Impact
4. Design	d) Primary school	IV. Effect*
5. Mak* (Make/Making)	e) Junior school	V. Learn*
6. Sculpt*	f) Middle school	VI. Brain
7. Music	g) Secondary school	VII. Neurolog*
8. Drama	h) Home	
9. Visual Arts	i) Community	
10. Poet*		
11. Theatr*		
12. Creat*		
13. Writ*		
14. Expressive		

Five databases most relevant to the area were systematically searched, namely British Education Index (BEI), Australian Education Index (AEI), Education Resources information Center (ERIC), Applied Social Sciences Index and Abstracts (ASSIA) and Web of Knowledge (WoK).

3. Screening studies

Each source was screened against the inclusion criteria above. The research team undertook this activity collaboratively.

4. Describing and mapping

Each included study was described using a standard coding derived from the EPPI-Centre Education keywording strategy (EPPI-Centre 2007), including variables such as population focus, study design and key characteristics. These were used to draw up a ‘descriptive map’ providing a systematic description of research activity in each age phase and type of arts programme.

5. Quality and relevance appraisal

The research team evaluated each study within their descriptive map in terms of the:

- trustworthiness of results judged by the quality of the study within the accepted norms for undertaking the particular type of research design used in the study (methodological quality);
- appropriateness of the use of that study design for addressing its particular research questions (methodological relevance);
- appropriateness of focus of the research for answering the review question (topic relevance);
- judgement of overall weight of evidence (WoE) based on the assessments made for each of the above criteria, on a scale of 1 (limited WoE) to 4 (excellent WoE derived from highly trustworthy results of a study with appropriate focus and design).

The WoE judgements were made independently by individual members of the team before comparing inter-rater reliability and arriving at an overall consensus for each study. The progressive screening process outlined in stages 3 to 5 is summarised in Figure 2.

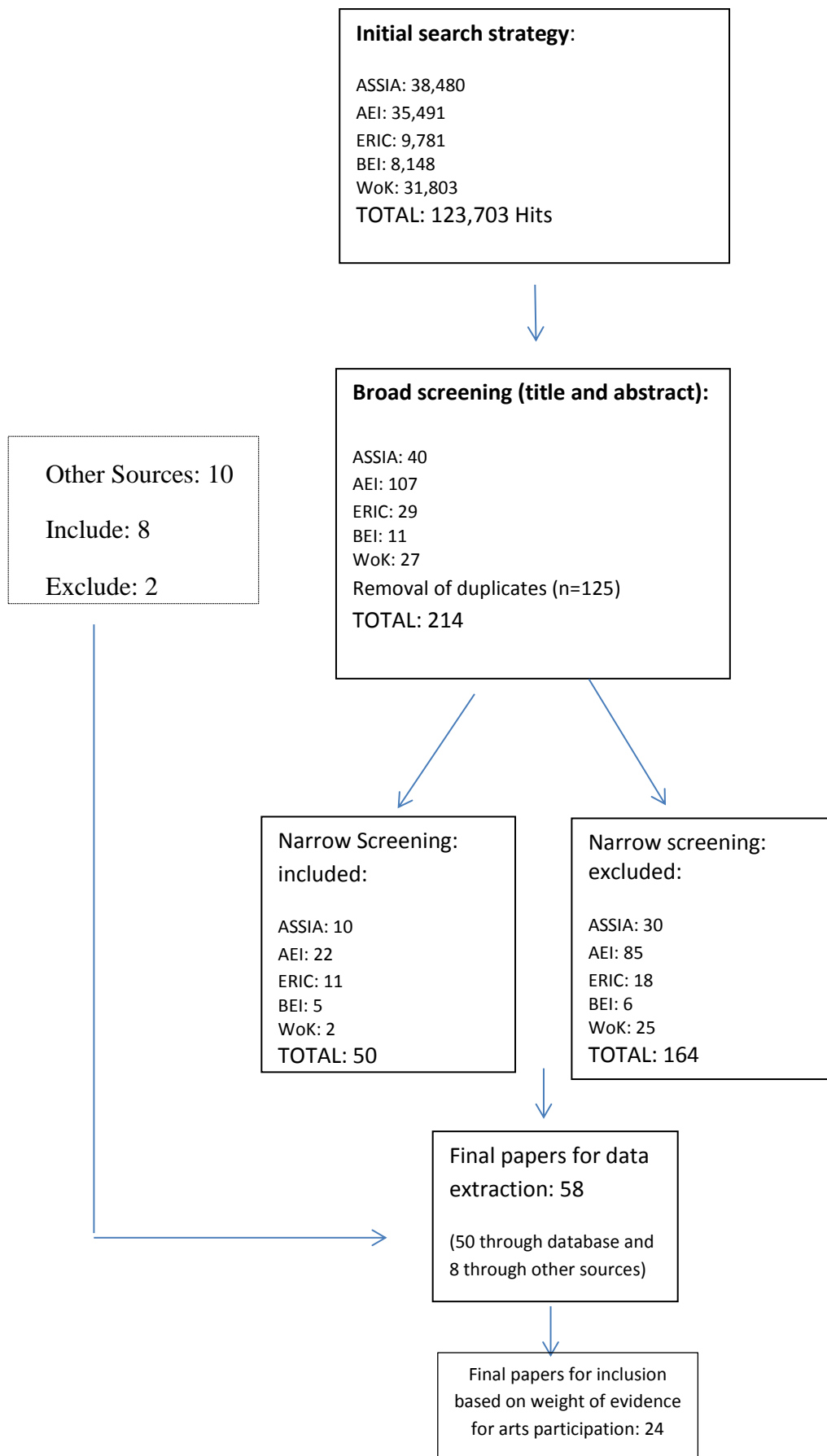


Figure 2: WP2 Search Strategy Flow Chart

6. Synthesising study findings

We used the approach of Narrative Empirical Synthesis: ‘...an approach to the systematic review and synthesis of findings from multiple studies that relies primarily on the use of words and text to summarise and explain the findings of the synthesis (Popay et al. 2006: 5). This first involved bringing together the results from individual studies in structured narrative summary tables before drawing upon these narratives to draw higher level conclusions concerning the overall weight of evidence for different types of impact or association.

7. Conclusions/recommendations

A set of recommendations closely linked to the findings of the synthesis were constructed so that the commissioners of the review could see the basis on which each recommendation was made. This included identification of potential limitations in the review methodology, trustworthiness, generalisability or transferability of findings.

3. Results

Of the 58 studies which met the review’s screening criteria and from which data were extracted, 44 were journal papers, four theses, nine ‘grey’ literature such as research reports and one document was from the Scottish Government website. Only those that were rated as providing ‘excellent’ or ‘very good’ weight of evidence in associating participation in arts with academic achievement (n=24) were included in the findings. These studies were conducted in the US (n=13), Australia (n=7), England (n=2), Finland (n=1) and Canada (n=1). Of these, 16 quantitative studies (one in secondary school settings, three cross-phase, ten in primary schools and two with pre-school children) claimed strong evidence of positive impact on various aspects of pupils’ academic achievement, including literacy, numeracy and academically-related benefits such as attitude towards school. A further three studies (one secondary, one primary and one cross-phase) reported limited evidence of impact; whilst one secondary, and one primary and secondary-based studies reported an increase in academic achievement but specifically mentioned that they were not making any causal claims. However, three of the studies reviewed (one secondary, one cross-phase, one primary) found no evidence of impact on academic achievement from participation in arts activities. It is important to note that, as studies were methodologically different, they tended to apply different measures of association, from ‘statistically significant’ in to indicative, so the apparent discrepancies in findings may in some cases be methodological rather than substantive. We will explore some of these differences in the results below, which are presented thematically in terms of the types of academic benefit reported.

Arts participation and children’s literacy

Seven quantitative, quasi-experimental studies claimed a causal impact of arts participation upon children’s literacy attainment. For example, in the early childhood age-phase, Brown et al. (2010) used receptive vocabulary tests to measure attainment at the end of one and two

years of attendance at the ‘music-enriched school’ (Kaleidoscope) programme in the USA, involving participation in music, creative movement – it was not specified how this movement was ‘creative’ - and visual arts. This quasi-experimental study involved 165 ethnically-diverse, disadvantaged children aged 3-4 and their main carers (63 at Kaleidoscope and 102 at a comparison school). Controlling for demographic factors, the study found that children at Kaleidoscope achieved significantly higher end-of-year receptive vocabulary scores than those in the comparator schools, suggesting that including a greater proportion of arts participation in the curriculum had enhanced literacy attainment.

In the primary age-phase in the US, Wandell et al. (2008) undertook a study over three years, with 49 children aged 7-12 years who were already part of a longitudinal study exploring the relationship between brain development and reading skills. Participants completed a questionnaire on their experiences of arts education (including visual arts, music, dance and drama) together with a ‘Child Temperament and Personality’ questionnaire, which was designed to provide an indicator of artistic ability. Parents also provided information about their child’s involvement in arts learning, including frequency, type and skill-level, together with an indication of their child’s temperament and willingness to engage in new experiences on the ‘Openness to Experience Scale’. The authors report a relationship between the amount of music education received in the first year and the degree of improvement in reading in the third year of the study. Effects upon literacy attainment more specifically associated with musical participation were claimed by Babo (2004), who reports on a study conducted in two US schools with 178 pupils (93 of whom were learning a musical instrument). Standardised tests were used to measure attainment and – when controlled for IQ, gender and SES – the study found a positive relationship between engagement in instrument tuition and reading achievement based on CAT scores. The causality in this study is, however, open to question as instrument tuition tends to be associated with other socioeconomic factors.

Whilst Babo’s study addressed individual music tuition, Kinney’s (2008) study focussed on the benefits of communal and group music making, which explored the impact on academic achievement of participation in an instrumental performing ensemble (band) and choir in two US middle schools. Standardised tests (State Proficiency Scores in reading, maths, citizenship, writing; and McGraw-Hill Terra Nova CTBS Multiple Assessments for reading, maths, science, language arts and social studies) were used to measure pupil attainment of two cohorts: 6th Grade (N=463) and 8th Grade (N=416) before and after pupils joined the band or choir. For the younger cohort, there were statistically significant differences between band members’ scores for reading and writing and those of choir members or those who participated in neither. Interestingly, scores for choir and non-participants were broadly similar, suggesting that it is the learning of a musical instrument that is significant rather than joining a group to make music together. However, benefits of choir membership are indicated in findings from a qualitative Australian study by Heyning (2010), in which 90 primary school children aged between 7 and 12 voluntarily participated in weekly one-hour choral singing sessions, described as part of the ‘creative arts’. The article reports literacy gains for participants such as improvement in memory through the use of rhyme and vocabulary skills; and improvement in children’s vocabulary and listening skills. These findings are based on

video analysis, participant questionnaires and teacher interviews rather than standardised tests, potentially devaluing them within the ‘evidence-based’ discourse, although the methodology appears robust.

A challenge to Babo’s (2004) and Kinney’s (2008) findings concerning the impact of musical instrument tuition comes from the longitudinal study undertaken by Costa-Giomi (2004), which used a sample of 117 4th grade (9 year old) pupils from low-income groups in 20 English language schools in Canada, who had previously not participated in formal music lessons. Of these 63 were selected at random to take piano lessons and the other 54 became a control group. Analysis of results from language and mathematics elements of academic achievement tests, pupil reports and self-esteem assessments at the beginning and after two and three years of the study found that although the experimental group’s marks improved, especially for music, there was no evidence of a statistically significant impact on participants’ literacy achievement. This suggests that either the socioeconomic status of Babo’s and Kinney’s instrumentalists was more significant in their academic achievement than their musical participation or that playing certain types of instrument in groups is more beneficial than learning solo piano.

In a study of multiple-arts participation in the US, Greenfader, Brouillette and Farkas (2015) used a randomised experimental design to measure the impact of participation in performance arts (drama and ‘creative’ movement/dance) for a year on the English language skills of pupils who primarily spoke a language other than English. They report that the treatment group outperformed the control group on speaking assessments, with those with the most limited English speaking abilities at baseline benefitting the most. However, there was no significant difference for listening skills. Brouillette et al. (2014) explored the impact of the *Teaching Artist Project*, which brings practising theatre and dance professionals into schools to work with pupils in the US. Using a quasi-experimental design, they captured the effects on engagement (measured by school attendance) and achievement of oral language skills (measured using the California English Language Development Test) of pupils who primarily spoke a language other than English at home in five city schools. The artist visited each school class (kindergarten to second grade) once a week to lead ‘creative drama’ sessions – the creative tag added to distinguish them from ‘normal’ drama lessons through working with pupils’ ideas. The study found that pupils’ listening and speaking skills increased significantly.

Arts participation and children’s mathematics

Whilst some of the studies targeting literacy improvement also measured mathematical achievement, there were fewer findings overall that arts participation was associated with gains in numeracy, with three studies specifically addressing this benefit. In the pre-school age-phase, Neville et al. (2008) report on another US study with 88 children from *Head Start* pre-schools, 2-5 years old and of low socioeconomic status. *Head Start* is a government programme providing comprehensive early childhood education, health, nutrition, and parent

involvement services to low-income children and their families. The experimental group comprised 26 children who participated in music activities – listening, movement, playing music and singing - with a ratio of 2 teachers to 5 children. There were three control-comparison groups: one (n=19) receiving non-musical *Head Start* teaching with a teacher: child ratio of 2:18; another (n=20) with the same curriculum but a ratio of 2:5; and a third (n=23; teacher: child ratio not given) receiving ‘attention training’. Each group participated in their intervention weekly for 40 minutes, five days per week for eight weeks. Children in all groups were tested before and after intervention using instruments measuring language proficiency, vocabulary, letter identification, ‘intelligence quotient’ (IQ), visuospatial intelligence, and developmental numeracy. The study reported significant positive impact on non-verbal IQ, numeracy and spatial understanding for children in both the music and attention groups. However, it is worth noting that this impact may have owed more to the high ratio of teacher to pupils in both small groups’ where pupils received a high level of attention. Neville et al. also suggested that as music teaching is often undertaken in small groups with either individual tuition or high pupil to teacher ratios; it is possible that it is level of attention rather than the music that produces improved outcomes.

Whilst musical and mathematical aptitude are often associated in the popular imagination, not all studies of musical interventions reported strong numeracy gains. For example, Babo (2004), who reported strong impact on pupils’ literacy in a study conducted in two US schools with 178 pupils (93 of whom were learning a musical instrument, see above) found that the outcomes for mathematical achievement were more variable. Johnson and Memmott’s (2006) quantitative study analysing anonymous standardised test scores from 4,739 3rd, 4th, 8th and 9th grade pupils from 8 US elementary and 11 middle schools, found that pupils undertaking ‘high quality’ music instruction had higher standardised test scores in mathematics than those whose musical experience was of lower quality. These differences were significant; however the effect size was small. A further qualification to the benefits of musical participation is offered by Spelke (2008), who reports on three experimental studies with children and young people in the US. Experiment 1 was with 85 children and young people, 5-17 years of age from a prosperous area with moderate levels of music participation. Experiment 2 involved 32 pupils aged 8-13 years old with a high level of music participation recruited from music schools, compared with 29 children in the same age group with low level of music participation. Experiment 3 involved 80 pupils aged 13-18 from a private school for the arts. Participants undertook 12 tests in all. Findings suggested that pupils involved in short periods of low or medium-level of music education appear to derive no mathematical benefits. When compared with pupils who had little if any music instruction, pupils with significant experience of music education over a sustained period had improved test scores relating to geometry, but not numeracy. There appears to be a need both to distinguish between numeracy and other aspects of mathematical achievement in relation to musical participation, but to pay attention to the length of time for which participants have been engaged in music-making.

On the strength of one study reviewed, there appears to be a more positive association between mathematical gains and participation in arts programmes with a wider focus than

music alone. In a study conducted in the US, Garcia, Jones and Isaacson (2015) - again researching within a positivist paradigm - tested the hypothesis that participation in a 'fine arts' (multidisciplinary) programme would demonstrate a statistically significant difference in the achievement of all participating primary school children in the Texas Assessment of Knowledge and Skills (TAKS) test. They found that extended participation in the programme led to statistically significant differences in the mathematics achievement of all children, including children who came from economically disadvantaged families. As with the musical projects reported above, the longitudinal nature of the experience appears to be a more significant factor in associated mathematical gain than its discipline focus.

Arts participation and children's overall academic achievement

A number of papers reviewed made claims for the effect of arts participation on children's general academic performance, or over a range of subject areas. In a different early childhood research project to that reported under 'literacy' above, Brown et al. (2010) report on a quasi-experimental study to compare children's attainment at the end of one and two years of attendance at the 'music-enriched school' (Kaleidoscope) programme (see above). The sample comprised 194 ethnically-diverse children aged 3-4 from socioeconomically disadvantaged backgrounds, together with their carers and teachers. Achievement data were derived from pupil assessments and interviews with parents, and were analysed against demographics, developmental stage and pre-intervention academic achievement. The study found a larger effect size for children who had been at the school for two years by comparison with those of the same age who had only participated for one year. Controlling for developmental stage and other factors still suggested an effect on overall achievement for arts participation, which also led to increased preparedness for school.

In the primary phase, Metsapelto and Pulkkinen (2012) undertook a longitudinal study in Finland over three years involving 302 children aged 8-10 at the start of the programme. The participants followed the Integrated School Day (ISD), which aimed to increase involvement in extra-curricular activities such as 'sports, music and arts'. A questionnaire on participation in extracurricular activities (including arts) was jointly completed by parents and children twice every year. School achievement was based on teacher ratings using items developed in a Finnish epidemiological twin study. Pupils' attainment in reading, writing, arithmetic and academic working skills (perseverance, attentiveness, and attention to detail) was compared with average class performance. They found that pupils who had two or three years' participation in arts and music extracurricular activities had higher academic achievement than those with one year or no involvement. As this was a non-experimental study with no attempt to control for factors such as SES, sports participation or other features of ISD, no causality claims are made. However, as we argue above, the strength of correlation between longitudinal arts participation and general academic performance in studies of this nature makes a powerful case on its own methodological terms and should not be overlooked in favour of more experimental studies.

Another, smaller scale, mixed-methods study is reported by Trent and Riley (2009), who investigated the impact of integrating arts activities across a single primary school curriculum in the US. Researchers recorded pupil outcomes against course learning objectives using observation, researcher field notes/diaries, samples of pupils' work, teaching plans and materials, focus groups and photographic evidence of activities. Categories based on Denver Public School's benchmark criteria were used to assess pupils' achievement quantitatively. Whilst the integrated arts approach was found to allow greater space for pupil creativity, considerable impact (although not statistically significant in relation to the quantitative data) was reported on attainment in art, social studies and writing, in which participating pupils frequently exceeded benchmark outcomes. This increase in achievement was much greater than for curricular areas where arts was not integrated. Another example of an integrated arts programme aimed at the primary phase is the 'Song Room Programme': a tailored, long-term music and arts-based programme for children in disadvantaged communities in Australia. Vaughan et al. (2011) used a quasi-experimental design to evaluate the impact of The Song Room in 10 Government schools located in areas of socioeconomic disadvantage. Three of the study schools provided the six-month and three the 12-18 month programmes. Four similar schools that did not offer either programme were used as a control group. Data were collected from 370 pupils, divided into six-month participation, 12-18 month participation and non-participating groups. These included National Assessment Plan (NAPLAN) scores for literacy and numeracy, Australian Council for Educational Research (ACER) Social-Emotional Wellbeing (SEWB) indicators and case study interviews. The means of the three groups were compared using analysis-of-variance (ANOVA) measures with Benferroni Post Hoc Comparison. The study found that pupils who took part in the Song Room programme had significantly higher academic achievement than those who did not, whilst participating schools had improved results for all factors when compared with others. Once again, effects were more significant for the 12-18 month programme than for the shorter version.

In the secondary phase, Rosevear's (2007) correlation study for music participation focussed on 282 pupils from 3 secondary schools in Australia, all studying core subjects (English, Maths, Science, Society and Environment). A baseline questionnaire collected information on their background, level of participation in music, Rosenberg's Self-Esteem Scale and Chan's Perceived Self-Competence Scale. In addition, results of academic achievement were available for each participant. Of these, 124 respondents were music pupils (taking music at school as a subject) and 158 were not. The findings suggest that pupils regularly participating in music had higher test scores for all four core subjects; a correlation without claimed causality for some of the socioeconomic reasons suggested above in relation to musical instrument tuition. Another study finding strong association between arts participation from an early age and academic achievement in the teenage years (Catterall et al. 2012) undertook secondary analysis of longitudinal data from four national US databases: the National Education Longitudinal Study of 1988 (NELS:88); the Early Childhood Longitudinal Study: Kindergarten Class of 1998-1999 (ECLS-K); the Education Longitudinal Study of 2002 (ELS:2002) and the National Longitudinal Survey of Youth of 1997 (NLSY97). They found a positive correlation between academic outcomes for young people who had a significant involvement in a range of art forms in or outside school when compared with those with

lower involvement, including Higher Grade Point Averages and increased uptake of and academic outcomes in further education, even for pupils with high SES.

Another large-scale study covering a wide age-range is reported by Sharp and Cooper (2012), who synthesised a series of evaluations of Creative Partnerships (CPs) between creative professionals and schools undertaken in England between 2003 and 2011. Approximately 400 schools and 61,000 pupils were involved in a series of studies to evaluate the longer-term impact of CPs in primary and secondary schools. Statistical models were created to take account of the factors which might have had an impact on outcomes such as special education needs, gender and economic disadvantage. Multilevel modelling was undertaken to take account of different levels of data such as individual pupil and school. School-level findings indicated that CP schools had higher attainment levels at Key stage 3 and 4 from 2003-2010. Pupil-level findings indicated that those taking part in CP activities had improved attainment with improved progress at Key stages 1, 2, 3 and 4 (ages 7, 11, 14 and 16 respectively) in national tests in comparison to non-participants. Attainment improvement was more consistent in pupils in secondary schools.

However, a note of caution is offered by Bryce (2004) who evaluated four arts programmes in Australian schools, exploring the impact of each programme on academic achievement, school attendance and engagement. None of the evaluations produced empirical evidence that engagement in the arts contributed to academic improvement, with no significant difference in results for literacy, numeracy and writing when compared with pupils not participating in the programmes. Similarly weak associations are reported by Gacherieu (2004), who explored the impact on 58 ethnically diverse pupils' academic performance, attitude to school, social skills, self-esteem, public speaking and school attendance of a 10-week performing arts programme (including music, drama and theatre) in the US. Participants responded to questionnaires three times; before and after participation, and at end of the school year, self-reporting on academic progress. Semi-structured interviews were conducted with 10 pupils and two teachers to triangulate these findings, whilst school attendance records were monitored. The study found evidence of slight improvement in academic progress through the interviews, however these were not supported by questionnaire data. (Hardie et al. 2007), researching the effects of music ensemble participation in Australia claimed to control specifically for 'general ability' and found no evidence of impact on academic achievement. The contrast between these negative findings and those of Sharp and Cooper could be related to the nature or quality of the arts programmes themselves (there was no indication that they had involved outside expertise as had Creative Partnerships), in the length of engagement (10 weeks was relatively short by comparison with CP) or in the methodologies adopted. Overall, there appears to be a stronger weight of evidence in the studies reviewed for positive associations between arts participation and general academic performance than for Bryce's null outcome, however it is possible that other studies with similar findings have been conducted but not published.

Academically-related benefits of arts participation

Although not necessarily claiming direct associations between arts participation and attainment, several studies report on academically-related attributes that could then in turn have a positive effect upon attainment, such as improvement in verbal and visual memory (Greenberg, 2010; Heyning, 2010), vocabulary (Heyning, 2010); listening and learning skills (Greenberg, 2010; Imms et al., 2011); problem solving and thinking skills (Jeanneret, 2010; Portowitz et al., 2009); commitment to education (Stahl & Dale, 2013); working better as a team and perseverance (Bryce, 2004; Hallam et al., 2011; Imms et al., 2011); improved attitudes towards learning and school and ability to engage with the world of education (Burnard, 2008; Gacherieu, 2004); concentration and ability to organise (Hallam et al., 2011). For example, Greenberg (2010) conducted a study with participants in an after-school theatre programme in an ethnically diverse and disadvantaged public middle school in the US. A questionnaire was administered twice, once at the beginning and again at the end of the school year, as well as interviews with 17 pupils who carried on with the programme. Greenberg reports positive benefits on disadvantaged pupils' perceptions of their social and academic development, including teamwork and commitment to study. Stevenson (2014) explored the impact of drama teaching on science learning in a middle school class over three months in Australia. Data were collected through a variety of means including questionnaires, interviews, focus groups and learner and researcher journals. She reported a positive impact on pupil engagement, empowerment and sense of belonging, although not directly on academic attainment. Rosevear's (2007) correlation study (see above) found that young people who had significant engagement in arts were more likely to engage in wider public community activities (such as volunteering) than those who had not.

Several studies reviewed in relation to academic outcomes above additionally claim benefits to participants' creativity – though this term is generally not defined. For example Garcia, Jones and Isaacson (2015) defend the 'fine arts' programme upon which their study reported as bringing 'creative learning opportunities' to such children. Trent and Riley (2009) claim that an integrated arts approach allowed 'greater space for pupil creativity', whilst Vaughan et al. (2011) found that the Song Room programme developed participants' 'creative self-efficacy'. Burnard (2008) stresses the importance of 'foregrounding high-status creative projects' – i.e. those which involve disaffected students in following an idea from inception to completion – in bringing about these attitudinal changes, whilst one of Hallam's findings was that pupils were better able to take creative decisions. Imms et al. (2011: 4) report a positive impact upon children's 'creative skills', which they define as 'being innovative and inventive, utilising divergent thinking, originality and problem-solving. Interestingly, these studies tended to depart from their positivist discourse of measurement and impact when discussing participants' creativity, perhaps because – like the arts themselves – the complexity and multi-facetedness of this concept does not lend itself easily to reduction to a set of metrics.

Echoing some of the findings reported above concerning the effects of music making by comparison with more general arts experience, Rickard, Bambrick et al. (2012) attempted to

‘measure the impact’ in experimental studies of an increase in school-based music training on a range of cognitive and psychosocial measures for 10–13-year-olds in two studies in Australia. In the first study, with 127 secondary school pupils, the benefits of increased frequency of classroom-based music classes were compared with classroom-based drama and art lessons. The second study compared the effects of introducing a new classroom-based music programme with a new drama programme for 100 primary school pupils. Assessments were made at baseline and approximately six months after implementation of each programme. Outcomes were measured through scales such as Children’s Memory Scale word pairs sub-test, Kauffman Brief Intelligence Test, Culture-Free Self-Esteem Inventory, The School Life Questionnaire and Motivation Engagement Scale for music, drama and arts. The authors report that there was only weak evidence of the impact of school music (the focus of the study) as distinct from that associated with drama and art lessons, but that there was some overall effect from pupil participation more generally. These gains in self esteem and motivation appear to be in line with those of Garcia, Jones and Isaacson (2015 – see above) for mathematical attainment from an integrated arts programme by comparison with the more modest gains reported by Spelke (2008) for music alone.

A study reporting a weaker association between arts participation and academically-related benefits (Stahl and Dale, 2013) was much smaller in scale, conducted with 12 white working-class boys, 14-16 years old, from a school in North of England in an area of high deprivation and long-term unemployment. Semi-structured interviews and observations in classroom and during extracurricular activities were undertaken. Questions explored how the boys perceived their skills in making music by ‘DJ-ing’ and ‘MC-ing’. There were some signs that participants developed more self-discipline and ability to work harder, together with ‘creative agency’ (see comments on creativity in paragraph above). Involvement in creating rap music enabled boys who were previously reluctant and weak communicators to enjoy performing to peers, and some voiced a growing commitment to education generally. However, these emerged as additional findings from interview data and were not the main focus of this small-scale study. Even less effect is reported by Hardie et al. (2007), researching the effects of music ensemble participation, who found – as in the case of academic achievement (see above) - no evidence of what they termed improved academic self-concept amongst participants.

4. Discussion

As suggested in the introduction, the challenges of undertaking robust evaluation research in this field are reflected in the mixed picture that emerges from the studies reviewed. Although some studies employing experimental (e.g., Babo 2004; Greenfader et al. 2015) or quasi-experimental (e.g., Brown et al. 2010; Neville et al. 2008) methodologies report impact of participation in arts on literacy (e.g., Babo 2004), mathematics (e.g., Kinney 2008; Neville et al. 2008) or general academic achievement (e.g., Brouillette et al. 2004) not all evidence stands up to close scrutiny and most indicates a positive relationship between arts and achievement rather than a clear causal effect (e.g., Babo 2004). Several methodological

factors impinged on the weight of evidence presented, including lack of longitudinal follow up after the completion of the arts programmes, and a mix of arts forms (sometimes with sports and other co-curricular activity) making the effect of specific arts participation unclear. Interestingly, two of the most rigorous studies that found positive associations were conducted with pre-school children (Brown et al. 2010; Neville et al. 2008), whilst one of the secondary-phase studies that used a longitudinal dataset and claimed to control for a number of factors including prior academic attainment (Hardie et al. 2007) found no impact on achievement. This suggests that the effects of arts participation may be more powerful for young children than for adolescents – though Sharp and Cooper’s (2012) findings concerning Creative Partnerships suggest otherwise.

Methodologically, the relatively low number of experimental designs in the reviewed studies is perhaps unsurprising given the nature of arts experience, as discussed in the introduction. Huat See and Kokotsaki (2018) in their systematic review for the Education Endowment Foundation – a body that only commissions randomized controlled trials (RCTs) to evaluate educational interventions – lament the low number of longitudinal studies, focus on self-reporting, and perceptual data in arts education studies. They criticise non-experimental designs for not controlling for the impact of other variables when analysing data. Although perceptual data are important, positivists would argue that it is necessary to have some ‘objective measures’ to determine impact, such as change in academic scores and any standardised scales that require more than self-reporting – these are indeed included in some of the studies we reviewed, particularly those from the USA (e.g., Babo 2004; Wandell et al. 2008). However, as we have argued, qualitative and correlational studies can be equally rigorous in their own terms, and frequently offer greater validity and depth of understanding of participants’ experiences. Whilst such studies tend to have smaller samples, this is not always the case and does not prevent them from being compared with findings from larger groups. Of course, in some cases, especially where primary data were collected, sample size was a reflection of the size of the group receiving an arts programme. In those cases, it would have been worth mentioning the response rate in relation to those who had participated in or attended arts activities and events, in order to gain an understanding of the representativeness of responses reported. Since it appears from the studies reviewed that greater associations are achieved between academic outcomes and long-term engagement with arts programmes, we would suggest that future evaluations adopt longitudinal designs to capture longer-term impact, build in a baseline and follow up phase, and employ source and methodological triangulation.

As well as its length, other conclusions may be drawn from our review concerning the type of arts participation which may yield the greatest benefits. A surprisingly large number of studies focused specifically upon music, with some very strong claims in relation to literacy and general academic achievement, and surprisingly some slightly less strong associations with mathematics. Huat See and Kokotsaki (2018) in their systematic review for the Education Endowment Foundation conclude that only music programmes provide sufficiently strong evidence of impact on academic achievement, however they also conclude that by combining the evidence from experimental and longitudinal, correlational studies together

there may be promise in multi-arts forms. This echoes the findings from our review, in which some of the integrated arts projects (e.g. Garcia, Jones and Isaacson 2015) reported stronger effects than for music participation alone. Only one of the reviewed studies highlighted that the quality of arts programme (Johnson and Memmott's 2006) - in that case music - might play a role in the impact of arts participation on achievement. This is perhaps not surprising given the difficulty reported by other studies in defining the quality of pupil learning experience. What constitutes a good quality arts programme in the subjective judgement of its participants may depend on each individual's preferred learning approaches as well as their purpose in joining the programme. The motivations behind running or participating in an arts programme might be different for teachers, arts practitioners, families and children. Another striking feature of the literature surveyed is how little mention is made of the theoretical perspective underlying the provision offered. Only two studies referred to theories of change, and only five studies made reference to theories underpinning arts practice. Whilst these five studies spanned the methodologies from experimental to qualitative and found a range of levels of association – such that no conclusions can be drawn regarding the effect of theorisation – it would be instructive to know the foundations upon which the programmes evaluated were constructed. This suggests that either arts practice is under-theorised or the researchers were not aware of the theories underpinning the artwork of others that they were researching. In order to make a difference to participants' lives it is important for educators and researchers alike to develop a theory of change to make explicit the mechanisms by which any anticipated improvement in academic achievement or other desired outcome might come about.

5. Conclusion and Implications

Owing to our inclusion criteria (e.g., time period of 2004-2016, English language publications), key terms, databases, it is possible that some useful high quality studies have been missed that could have provided further evidence to support or refute the findings of this literature review. However, every effort was made to avoid this through quality assurance and sharing of papers between and across the three teams. It is also important to consider that as the lens used to review and evaluate the studies included here is based on the EPPI-Centre steps and requirements, our frame of reference is likely to be different from that of the authors. The studies included in this review have been evaluated as far as possible keeping in mind what the authors had set out to achieve.

Broadly, there appears to be sufficient evidence from this review to justify public bodies in considering supporting 'high-quality' (clearly defined), longitudinal arts education programmes for children in schools and community settings on the basis of their potential to enhance academic achievement. It appears to be important that such arts programmes and activities can be provided for extended periods of time to maximise their impact. Whilst it may be assumed arts practitioners have a theory underpinning their arts practice, it is important that it is made explicit so that the readers (and researchers) are aware of why the arts programme has been designed in a particular way. It will also make explicit their beliefs

about arts provision and lead to more reflexivity in their practice and related research. Ultimately, investment in the arts for children may be argued for on the basis of its intrinsic merit (Eisner 2002) and cultural significance (Abbs 2003), the development of aesthetics (Reid 1973) and the deep, affective experience of participating for its own sake (Gautier 1856), but if sufficiently persuasive evidence of other related benefits can be presented, this can only strengthen its case.

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